



## Crew Resource Management (CRM) Case Study - United Airlines Flight 173

### THE LEGACY OF UA FLIGHT 173: BORN FROM TRAGEDY, BUILDING SAFER TEAMS

#### CASE STUDY: UA FLIGHT 173 - THE COST OF FIXATION



SCENARIO  
DC-8



Date: Dec 28, 1978

**189**  
People Onboard

#### A CRITICAL 60-MINUTE TIMELINE

**1. THE TRIGGER:**  
Gear Light Fails  
(Aborted Landing, 5,000ft Holding Pattern)

**AUTHORITY GRADIENT**

Captain




First Officer

Engineer

"We're down to 5,000 [lbs of fuel]..."


FAILED COMMUNICATION


Hinting & Hoping

TECHNICAL REALITY	HUMAN REALITY
 Gear actually down & locked	 Hyper-fixation on landing gear for 60 mins   Ignored fuel depletion

**2. THE FATAL DEVIATION**  
(Caption: Technical vs Human Reality)

**3. THE OUTCOME**

  
**10 People Killed**  
(Fuel Exhaustion)



  
**Engine Flameout**

#### WORKSHOP: THE 60-MINUTE TRAP

#### TASK 1: WHY IT HAPPENED (THE ANATOMY OF A BREAKDOWN)

PRIMARY PROBLEM	CRITICAL PROBLEM
Distracting technical issue, like a landing gear light	Core mission or safety risk, like fuel exhaustion

**DISCUSSION PROMPTS:**

-  What is a "landing gear" vs "fuel" in your department?
-  Discuss **AUTHORITY GRADIENT**: Does junior staff feel safe challenging senior leaders?


#### TASK 2: PREVENTATIVE ACTIONS (THE PREVENTION PLAN)

**STEP A: DEFINE "HARD LIMITS"**  
IF [Defined Condition] REACHES X, WE LAND IMMEDIATELY

**STEP B: DEVELOP ASSERTIVE COMMUNICATION PHRASES**


PASSIVE	ASSERTIVE
The data looks a bit off.	I have a safety concern. Stop & verify data.
The data looks a tog off.	I have a safety concern. Stop & verify data.

**STEP C: THE "TWO-CHALLENGE RULE"**


Action
→
Action
→
Top Flamout

#### REFLECTION FOR MANAGEMENT

The goal is to build a "CREW" trained to snap the leader out of fixation BEFORE engines stop.



CRM is now used worldwide in **Aviation, Healthcare, & High-Stakes Corporate Environments** to prevent tragic errors.

### Introduction

The crash of United Airlines Flight 173 in 1978 is a seminal moment in safety history. It led directly to the creation of Crew Resource Management (CRM), a training system now used worldwide in aviation, healthcare, and high-stakes corporate environments.

The following case study and workshop are designed to help your team analyze the breakdown of communication and situational awareness that led to a preventable tragedy.

### Case Study: The Cost of Fixation

**Scenario:** United Airlines Flight 173 (DC-8)

**Date:** December 28, 1978

**Context:** The aircraft was on final approach to Portland with 189 people on board.

**The Triggering Event** - Upon lowering the landing gear, the crew heard a loud "thump" and felt an unusual vibration. The "gear down and locked" indicator light for the right main gear failed to illuminate.

**The Decision** - Captain Malburn McBroom decided to abort the landing and enter a holding pattern at 5,000 feet. He wanted time to troubleshoot the gear and prepare the cabin for a potential crash landing.

## The Fatal Deviation

- **The Technical Reality:** The gear was actually down and locked; a corroded part had caused the "thump" and broken the indicator circuit.
- **The Human Reality:** For the next **60 minutes**, the Captain became hyper-fixated on the landing gear. He ignored the ticking clock of fuel consumption.
- **The Power Dynamics:** The First Officer and Flight Engineer were aware the fuel was reaching critical levels. However, they used "hinting and hoping" language rather than direct confrontation.
  - *Engineer:* "We're down to five thousand [pounds of fuel]..."
  - *Captain:* "Okay." (Continues discussing landing gear)
- **The Outcome:** At 18:06, while the Captain was still calmly discussing the landing gear, the first engine flamed out due to fuel exhaustion. The aircraft crashed in a wooded suburb, killing 10 people.

## Workshop: "The 60-Minute Trap"

**Objective:** To identify how "tunnel vision" and hierarchical barriers manifest in your organization and to develop "Stop-Work Authority" protocols.

### Task 1: Why it Happened (The Anatomy of a Breakdown)

- **Group Discussion:**
  - Identify the Primary Problem vs. the Critical Problem. (In this case, the gear was the primary problem, but fuel was the critical one).
  - In your department, what is a "landing gear" (a distracting technical issue) that often causes people to lose sight of the "fuel" (the core mission or safety risk)?
- **Analysis:** Why didn't the junior crew members shout, "We are going to crash in 5 minutes if we don't land now"?
  - *Prompt:* Discuss "Authority Gradient." Does your junior staff feel safe challenging a senior leader?

### Task 2: Understanding the "Fixation" Signal

- **Activity:** Map the "Fixation Timeline."
  - Review the transcript snippets where the Engineer mentions fuel.

- At what point did the Captain lose **Situational Awareness**?
- **Workplace Parallel:** Identify a past project or incident in your company where a team was so focused on a minor detail that they missed a major deadline or budget collapse.

### **Task 3: Determining "Never Again" (The Prevention Plan)**

- **Workshop Output: The "Red Flag" Protocol**
  - **Step A:** Define "Hard Limits." For Flight 173, it should have been: "*If fuel reaches X, we land immediately, gear-light or not.*" What are the "Hard Limits" for your projects?
  - **Step B:** Develop **Assertive Communication** phrases. Practice moving from "Passive" to "Direct":
    - *Passive:* "The data looks a bit off."
    - *Assertive:* "I have a safety concern. We need to stop and verify the data before proceeding."
  - **Step C:** The "Two-Challenge Rule." If a junior team member raises a concern and it is ignored, they are *required* to challenge it a second time with greater intensity or escalate it.

### **Reflection for Management**

The NTSB concluded that the captain was "preoccupied." The goal of this workshop is not to blame the "Captain" in your organization, but to build a "Crew" that is trained to snap the leader out of fixation before the engines stop.